Name: Date:

Polynomial Operations PRACTICE (version 10)

1. Let polynomials $p(x)$ and $q(x)$ be defined below.

$$p(x) = -10x^5 + 7x^4 + 8x^3 - 3x - 2$$

$$q(x) = -8x^5 - 6x^3 - 9x^2 + 3x + 2$$

Express the sum of $p(x) + q(x)$ in standard form.

2. Let polynomials $a(x)$ and $b(x)$ be defined below.

$$a(x) = -3x^2 - 6x + 9$$

$$b(x) = -3x + 7$$

Express the product $a(x) \cdot b(x)$ in standard form.

3. Express $(x + 1)^4$ in standard (expanded) form.

Polynomial Operations PRACTICE (version 10)

4. Let polynomials $f(x)$ and $g(x)$ be defined below.

$$\begin{aligned} f(x) &= 3x^3 + 21x^2 + 25x - 28 \\ g(x) &= x + 5 \end{aligned}$$

The quotient of $\frac{f(x)}{g(x)}$ can be expressed as a polynomial, $h(x)$, and a remainder, R (a real number).

$$\frac{f(x)}{g(x)} = h(x) + \frac{R}{x+5}$$

By using synthetic division or long division, express $h(x)$ in standard form, and find the remainder R.

5. Let polynomial $f(x)$ still be defined as $f(x) = 3x^3 + 21x^2 + 25x - 28$. Evaluate $f(-5)$.